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SOME THALASSINIDEANS (DECAPODA : CRUSTACEA) FROM HERON IS., QUEENSLAND, EASTERN AUSTRALIA, AND A NEW SPECIES OF *GOURRETIA* FROM EAST AFRICA

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ABSTRACT

Five species of Thalassinidea from Heron Island, Queensland, Australia, were studied: *Axius (Neaxius) plectrorhynchus, Callianassa amboinensis, Callianassa martensi, Callianidea leura,* and *Upogebia (Acutigebia) trypeta. Upogebia (Acutigebia) trypeta,* originally reported from Amami-Oshima, Japan, is recorded for the first time from Australia. Examination of the male type-specimen of *Callianassa martensi*, establishes that *Callianassa haswelli* is a synonym of *Callianassa martensi*. In addition, one species of the genus *Gourretia, G. manihinae* sp. nov., from Tanzania, East Africa, is described.

INTRODUCTION

Dr. A. J. Bruce's small collection of Thalassinidea from Heron Island, Queensland, Australia, was studied. The Australian Thalassinidea were reviewed by Poore & Griffin (1979). Among their 40 species, four species, *Axius (Neaxius) plectrorhynchus, Callianassa amboinensis, Callianassa martensi,* and *Callianidea leura* are confirmed, and one species, *Upogebia (Acutigebia) trypeta*, is added to the Australian fauna.

Axius (Neaxius) plectrorhynchus is reported again from Heron Island. *Callianassa amboinensis*, reported from the northern part of Western Australia, is also found at Heron Island, Queensland. *Callianassa haswelli* Poore & Griffin is regarded as a synonym of *Callianassa martensi*, since there are no differences from the male type-specimen of *Callianassa martensi* from Mauritius. *Callianidea leura*, reported from Masthead Is., Capricorn Group, Australia, also occurs at Heron Island. The Japanese mud-shrimp, *Upogebia (Acutigebia) trypeta*, from Amami-Oshima, Japan, is also confirmed as a new record from Australia.

In addition, one new species of the genus *Gourretia, G. manihinae* sp. nov., from East Africa, collected by the E.A.M.F.R.O.

Research Vessel, "Manihine", off Tanzania, is described as a species related to *G. minor* from the Mediterranean and the Gulf of Guinea, Atlantic Ocean.

The following abbreviations are used in this paper, BMNH = British Museum of Natural History, London; NTM = Northern Territory Museum, Darwin; and TL = the total body length of the specimen.

AXIIDAE Huxley, 1879

Axius (Neaxius) plectrorhynchus Strahl, 1861

Restricted synonymy:

Axius plectrorhynchus Strahl, 1861:1060-1062, text-figs. 2-3, 11. — De Man, 1925: 13.

Axius plectorhynchus, — Hale, 1927:84-85, text-fig. 81. — Hale, 1927a:309.

Axius (Neaxius) plectrorhynchus, — Poore & Griffin, 1979:238-240, text-fig. 9.

Material — 1♂, damaged, 1♀, damaged, NTM Cr. 000523, Heron Island, 9 September 1979, coll. D. Fisk.

Remarks — Both male and female specimens examined are damaged; the male is torn off posterior to the eighth thoracic somite, and the female posterior to the third abdominal somite.

The specimens were collected from the seaward edge of beach rock, in vertical burrows. They were coloured in life with white and red markings (*fide* A. J. Bruce).

Distribution — Philippines, Luzon (type-locality); Ambon, Indonesia; Queensland, New South Wales, Victoria, South Australia and Western Australia.

CALLIANASSIDAE Dana, 1852

Callianassa amboinensis De Man, 1888 (Figs. 1-2)

Restricted synonymy:

Callianassa amboinensis De Man, 1888:480-482, pl. 20 fig. 4. — Poore & Griffin, 1979:248-249, text-fig. 14.

Material — 1 ovig. ♀, TL 46mm, NTM Cr. 000525, St. 95, 11m, Wistari Reef, Heron Island, 18 June 1979, coll. L. Owen; 1 ovig. ♀, TL 31mm, NTM Cr. 000526, St. 86, 11-20m, N.E. Wistari Reef, Heron Island, 25 May 1979, coll. L. Owen & L. Thomson.

Description — In the female from St. 95 the rostrum is a broad, obtuse projection (Fig. 1b-c). The frontal margin of the carapace is laterally unarmed. The eye-stalks are elongate, overreaching the distal margin of the first segment of antennule, and with a long, broad mesodistal lobe beyond the cornea. The peduncle of the antennule exceeds that of the antenna by half the length of its distal segment; third segment elongate, and about three times as long as second; flagella short, about 0.7 times as long as third segment.

The first pereiopods are subequal. In the larger cheliped (Fig. 2c), the ischium is dentate on the ventral margin, and smooth on the dorsal one. The merus is oval, slightly longer than the ischium; the outer surface is roundly carinate along the middle line, the ventral margin evenly curved, irregularly and minutely dentate, and the dorsal margin smoothly convex. The carpus is very broad, about 0.6 times as long as broad, and about 0.7 times as long as the merus. The palm is about 1.8 times as long as the carpus. The dactylus is about 0.7 times as long as the palm. The fixed finger is distally concave on the cutting edge.

The ischium of the smaller cheliped (Fig. 2d) is also dentate on the ventral margin. The merus is oval, about as long as the ischium, irregularly dentate on the ventral margin, and smooth on the dorsal margin. The carpus is about 0.7 times as long as broad, and 0.8 times as long as the merus. The palm is 1.6 times as long as the carpus. The dactylus is about 0.8 times as long as the palm. The fixed finger is distally concave on the cutting edge.

The third pereiopods (Fig. 1d) with the propodus rounded.

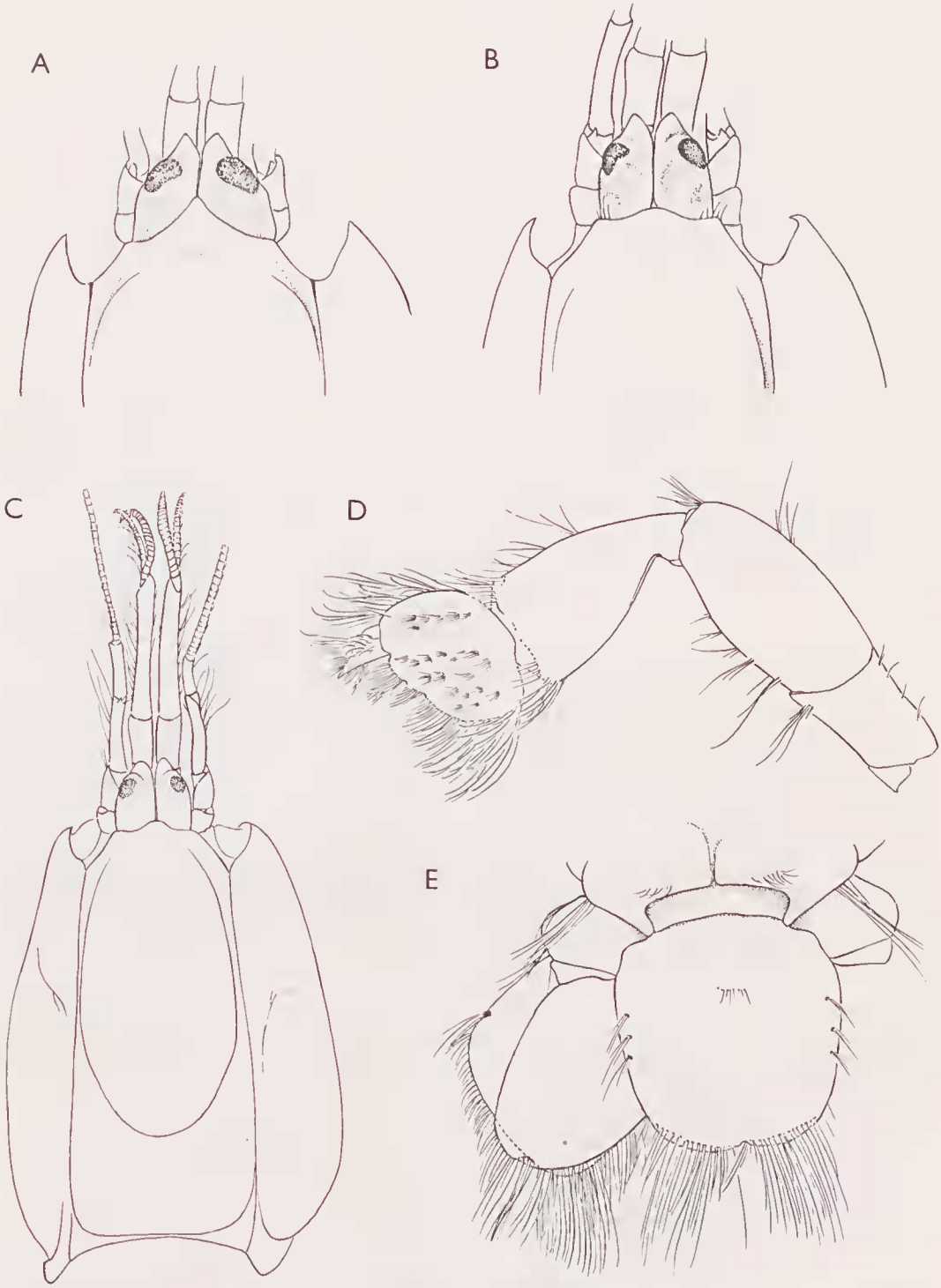

Fig. 1. *Callianassa amboinensis* De Man. A, anterior part of carapace, dorsal view. B, same. C, carapace, dorsal view. D, third pereiopod, outer view. E, tail-fan, dorsal view. (A, ovig. female, measuring 31mm, NTM Cr. 000526; B-E, ovig. female, measuring 46mm, NTM Cr. 000525).

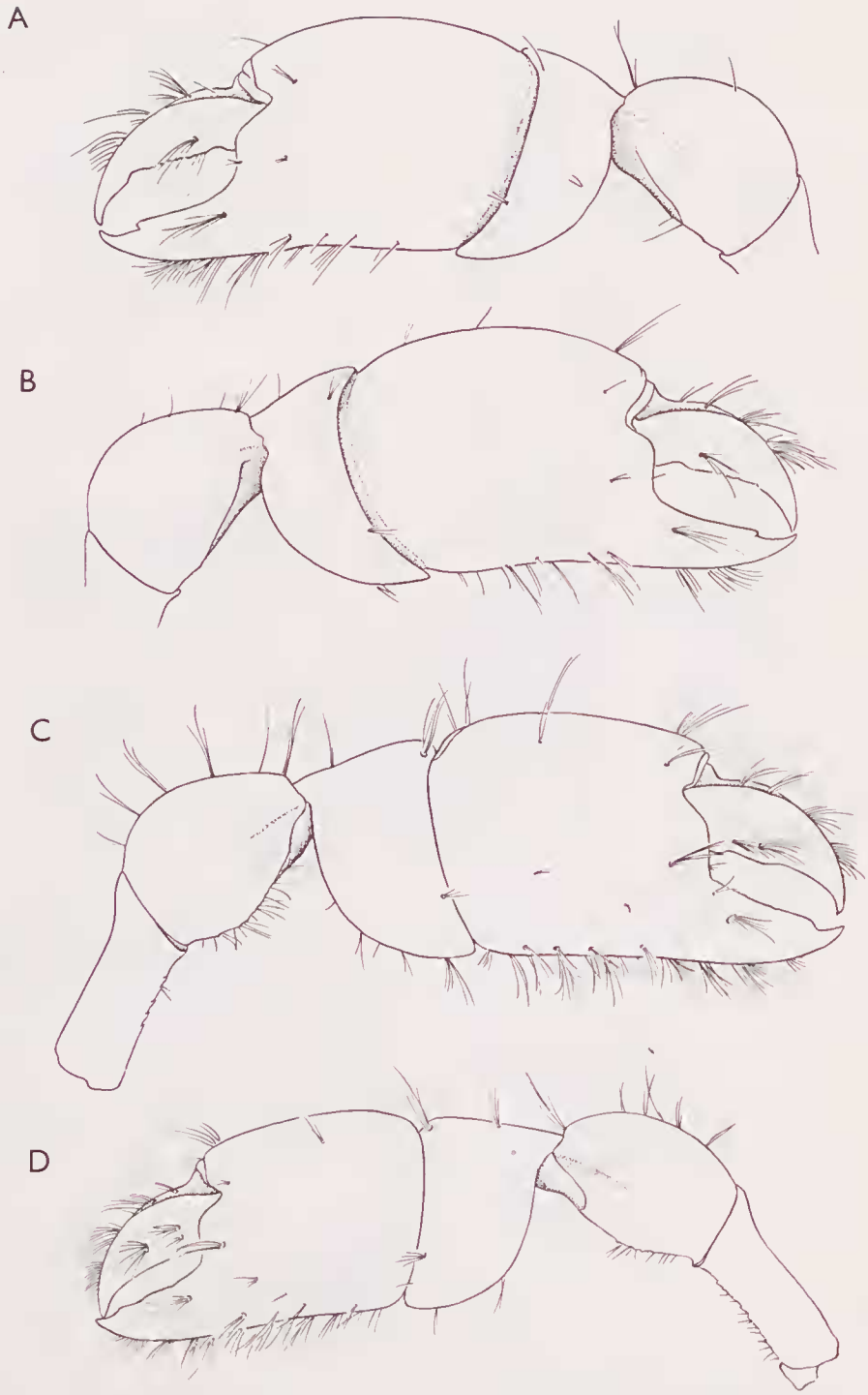

Fig. 2. *Callianassa amboinensis* De Man. A, larger cheliped, outer view. B, smaller cheliped, outer view. C, larger cheliped, outer view. D, smaller cheliped, outer view. (A-B, ovig. female, measuring 31mm, NTM Cr. 000526; C-D, ovig. female, measuring 46mm, NTM Cr. 000525).

The telson (Fig. 1e) is about as long as broad; the dorsal surface is medially provided with a transverse row of setae at about one third distance from anterior margin, laterally with three pairs of setae, and the posterior margin is medially concave. The uropods are suboval, slightly longer than the telson. The endopod on the left side is rounded on the posterior margin, while on the right side concave.

Some different features are observed in the female from St. 86. The rostrum shows a broad triangular projection (Fig. 1a). The eye-stalks are broadened, extending just beyond the distal margin of first segment of antennule, and with short mesial lobe beyond the cornea. Merus of the first pereiopod (Figs. 2a-b) is rather straight and scarcely dentate on the ventral margin, while roundly convex on the dorsal margin. The carpus is small in breadth, about 0.4 times as long as broad. The telson is entire on the posterior margin.

Remarks — De Man's type-female from Ambon was not examined in this paper, however two female specimens from Heron Island, measuring 31mm and 46mm in total length, agree well with the following characters mentioned in De Man's original description: the merus of first pereiopod without a prominent tooth on both sides, the eye-stalk with a long, broad, rounded mesodistal lobe beyond the large cornea, third peduncle of the antenna long, about three times as long as second one, and the propodus of third pereiopod rounded.

In addition, it seems that some characteristics of this species are variable with size. In De Man's type-female, measuring only 25mm in total length, the rostrum is developed as a broad, triangular and pointed tooth, the merus of the first pereiopod slightly convex on the ventral margin (See De Man, 1888, pl. 20 fig. 4), and the posterior margin of the telson is entire. However, in the female from St. 95 the rostrum is broad and obtuse, the merus of first pereiopod evenly curved on the ventral margin, the posterior margin of telson concave at the midpoint, and the posterior margin of endopod of uropod concave on the right side, and entire on the left side. In the female from St. 85 the rostrum (Fig. 1a) shows a broad triangular projection, the merus of first pereiopod is rather straight on the ventral margin, the posterior margin of the telson is entire, and the posterior margin of endopod of uropod entire on both sides.

Poore & Griffin (1979:248) mentioned some variations between De Man's type-female and their own female specimens from Dampier Archipelago, north Western Australia, measuring 44mm in total length.

Distribution — Salibu Island, Ambon (type-locality), Indonesia: north Western Australia and Heron Island, Queensland. This is the first record from eastern Australia.

Callianassa martensi Miers, 1884
(Fig. 3)

Restricted synonymy:

Callianassa Martensi Miers, 1884:13-15, pl. 1 fig. 1. — De Man, 1888:482-483, pl. 21 fig. 1. — Nobili, 1906:111, text-fig. 7.

Callianassa martensi, — Tirmizi, 1974:286-292, text-figs. 1-4.

Callianassa haswelli Poore & Griffin, 1979:263-266, text-figs. 26-27.

Material — 1♀, TL 30mm, NTM Cr. 00527, 0.2m, inner reef flat, Heron Island, 7 June 1976, coll. A. J. Bruce. — 1♂, TL 49mm, BMNH 1883.18, holotype, Mauritius, purchased from V. de Robillard.

Diagnosis — Frontal margin of carapace trispinose (Fig. 3a); rostrum acute, with each lateral projection also acute and articulated from the anterior margin of carapace. First pereiopods unequal. Larger cheliped (Fig. 3b) with ischium denticulate on ventral margin; merus acute, serrated, without

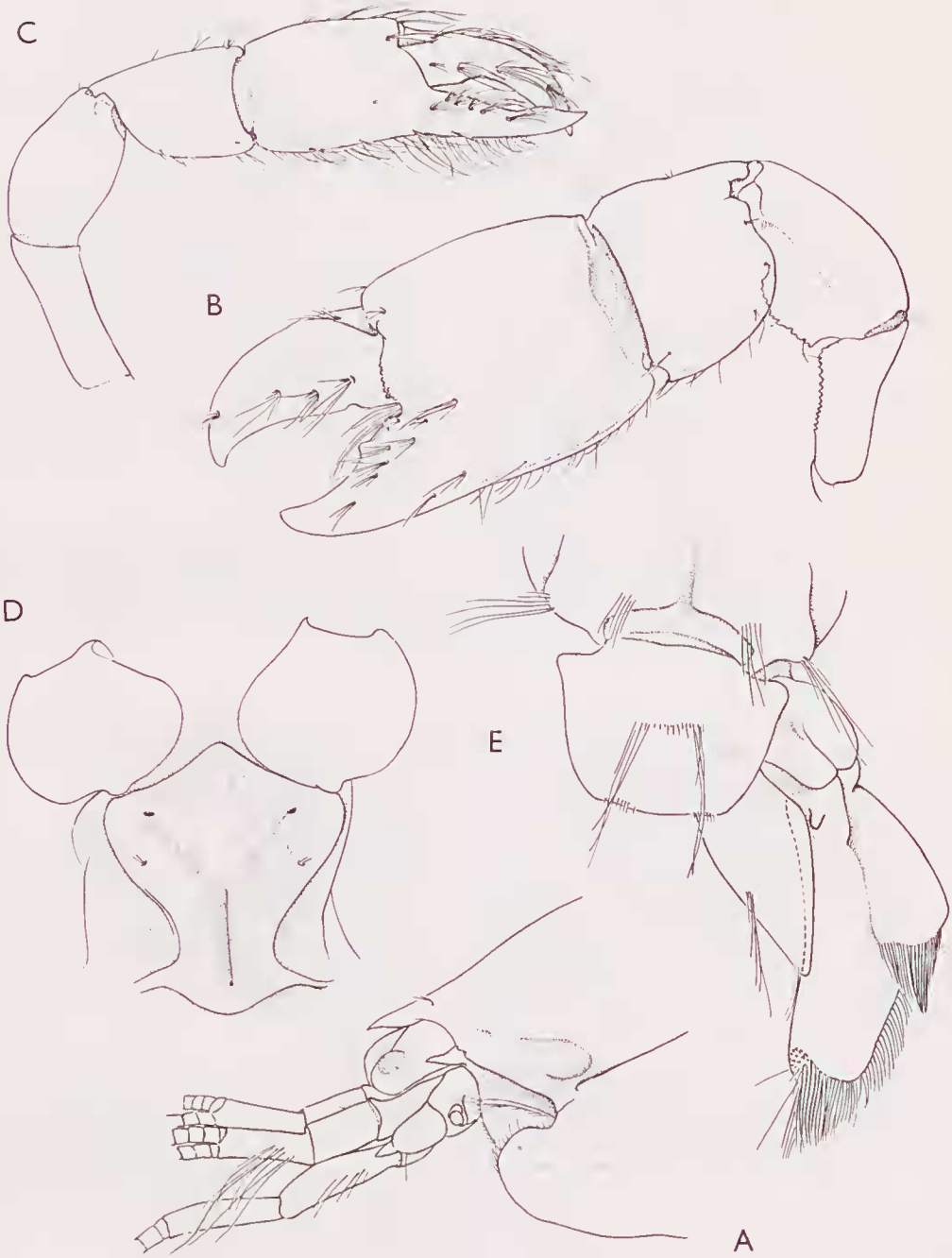

Fig. 3. *Callianassa martensi* Miers. A, anterior part of carapace, lateral view. B, larger cheliped, outer view. C, smaller cheliped, outer view. D, sternum between coxae of fourth pereiopods, ventral view. E, tail-fan, dorsal view. (A-E, male, measuring 49mm, BMNH 1883. 18, holotype).

strongly developed tooth or lobe on ventral margin. Telson (Fig. 3e) small, slightly broader than long, and slightly convex medially on posterior margin. Endopod of uropod lanceolate; exopod much produced, and about twice the length of endopod.

Remarks — The male holotype (BMNH 1883.18) from Mauritius has been examined. Miers (1884) stated that the specimen was "*46mm*" in total length, and "*26mm*" in the larger cheliped, and "*the sixth* [abdominal somite] *about as long as the two preceding segments taken together*".
holotype measures 49mm and 33mm in its respective parts, and 6th abdominal somite is much shorter than the preceding ones combined, though those differences are considered to be only technically misleading.

A small female from Heron Island agrees well with the holotype except in the sternum between the coxae of fourth pereiopods, which is bisexual in its features. In the female the sternum bears a median projection on the anterior margin and a Y-shaped notch on the general surface (Tirmizi, 1974, text-fig. 1E). In the male (Fig. 3d) there is no median projection on the anterior margin; the surface shows a clear mesial furrow on the posterior half, from the anterior end of which two shallow grooves are diagonally stretched out to the anterior margin of sternum, and provided with a central pit.

The specimens from some Queensland localities, described by Poore & Griffin (1979) as *C. haswelli*, seem to be a synonym of the present species, and no significant differences can be observed between those two species.

Distribution — Northern Arabian Sea; Mauritius (type-locality); Ambon, Indonesia; north and central Queensland, Australia.

Gourretia manihinae sp. nov.
(Figs. 4-5)

Material — 1 ♀, TL 17mm, holotype, NTM Cr. 000522, F.R.V. "Manihine", Stn. G.334 D-2, Pangani Bay, Tanzania, 5°29.2′S., 39°03.2′E, 35m, dredge, 3 January 1972, coll. A. J. Bruce.

Description — A small species. The carapace (Fig. 4a-b) shows an acute, triangular rostrum on the frontal margin. The dorsal region is narrow, and marked with the cervical groove at about the posterior third. The eye-stalks reach to the level of the distal margin of first segment of antennule, tapering distally, and with a small black-pigmented area. The pedunele of antennule just fails to reach the distal margin of that of the antenna. In the antennule the first and second segments are thick and short, the third is slender and slightly longer than second, and the flagella are 1.8 times as long as the pedunele. In the antenna the scaphocerite is present; the distal segment is about as long as the penultimate; and the flagellum 1.4 times as long as those of antennule.

The third maxillipeds (Fig. 5a) have the exopod extending to the level of the distal margin of the ischium, which is about twice as long as broad, and provided with a strong tooth at the inner proximal rectangular angle directed outwards along the proximal margin. The merus is about half as long as the ischium, and with a sharp tooth on the inner margin. The carpus is subtriangular, and much longer than the merus. The propodus is slightly shorter than the carpus, and slightly longer than the dactylus.

The first pereiopods are unequal. In the larger cheliped (Fig. 5b) the ischium is armed with four sharp teeth on the ventral margin, the distal one of which is the largest, lying at the midpoint; the dorsal margin is unarmed. The merus is about 0.8 times as long as the ischium; the ventral margin is convex, sharply carinate proximally with two denticles, and with a sharp, curved tooth at the proximal end. The carpus is 0.8 times as long as the merus, and also 0.8 times as long as broad. The chela is four times as long as the carpus, slightly crenulate on the ventral margin. The fixed finger is about 0.8-0.9 times as long as the dorsal margin of palm, with two obsolete teeth on the cutting edge, and incurved distally. The dactylus slightly overreaches the fixed finger, with four

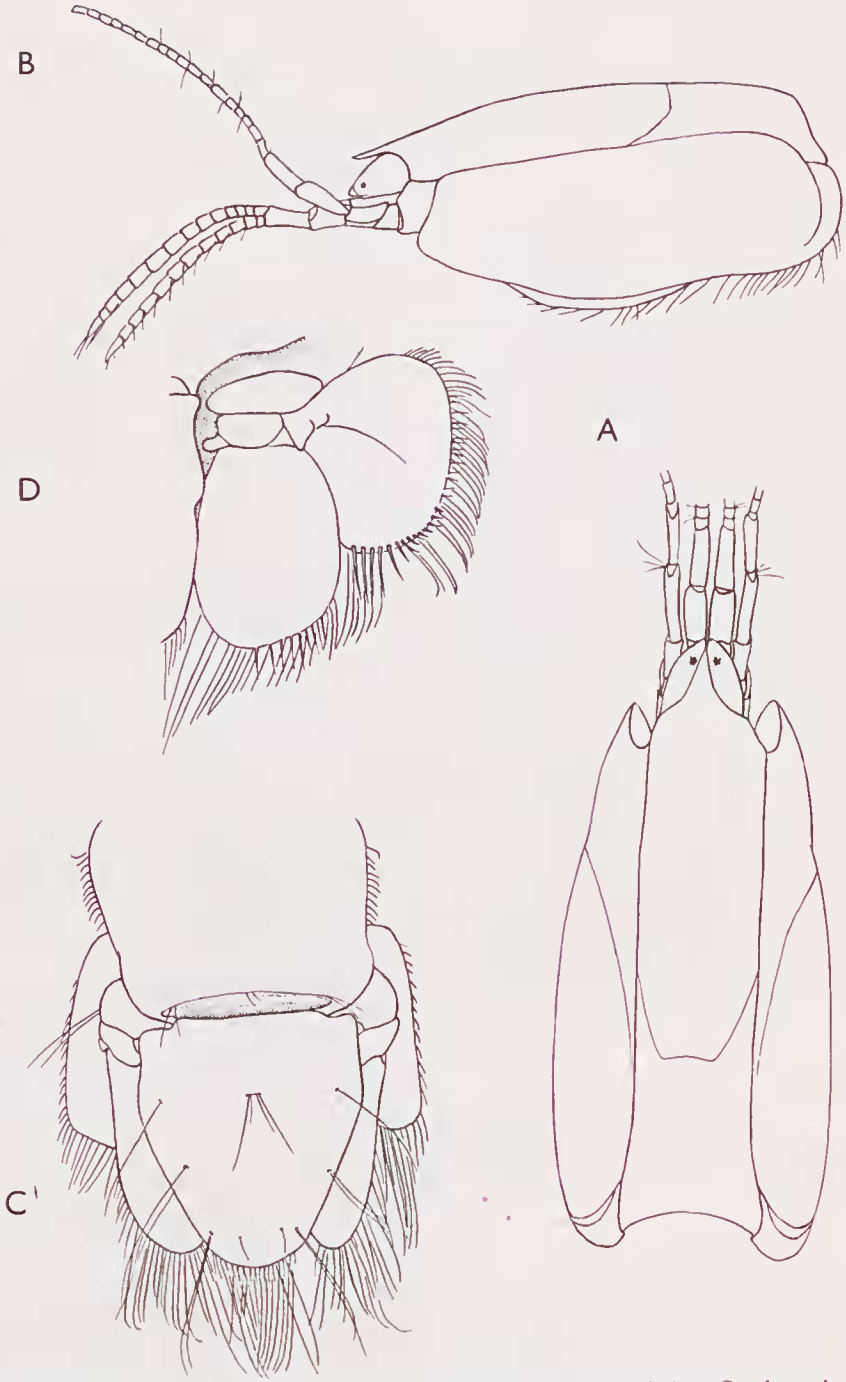

Fig. 4. *Gourretia manihinae* sp. nov. A, carapace, dorsal view. B, same, lateral view. C, telson, dorsal view. D, uropod, dorsal view. (A-D, female, measuring 17mm, NTM, Cr. 000522, holotype).

obsolete teeth on the distal two-thirds of the cutting edge, and incurved distally.

In the smaller cheliped (Fig. 5c) the ischium bears four sharp separated teeth on the ventral margin. The merus is about as long as the ischium; the ventral margin is slightly convex, smoothly carinate, and provided with a sharp curved tooth at the

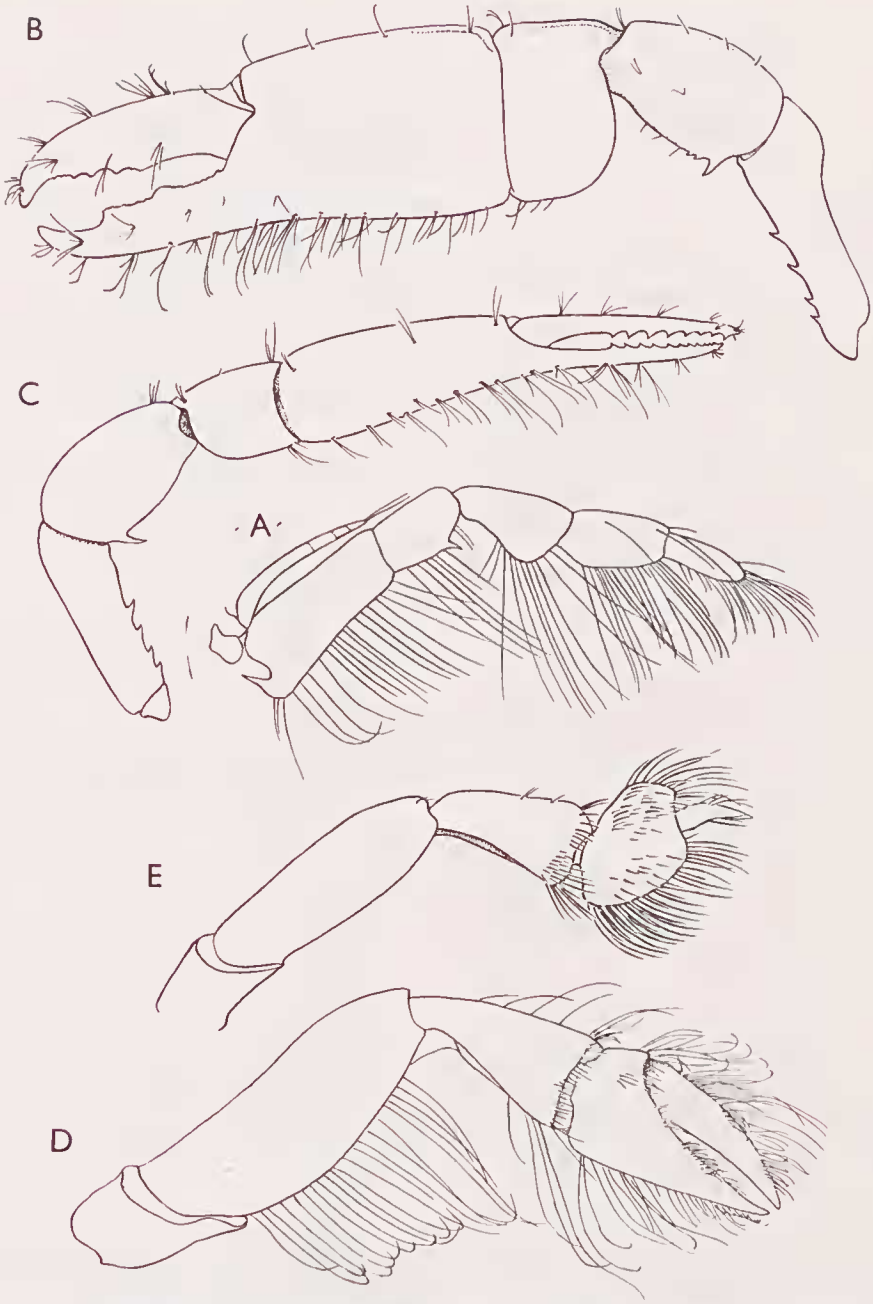

Fig. 5. *Gourretia manihinae* sp. nov. A, third maxilliped, outer view. B, larger cheliped, outer view. C, smaller cheliped, outer view. D, second pereiopod, outer view. E, third pereiopod, outer view. (A-C, female, measuring 17mm, NTM Cr. 000522, holotype).

proximal end. The carpus is about 0.6 times as long as the merus. The chela slender, tapering distally, and about four times as long as the carpus. The fixed finger is slender, about 0.8-0.9 times as long as the dorsal margin of the propodus, and furnished with a series of 10 triangular, proximally directed denticles on the cutting edge. The dactylus is also slender, slightly overreaching the fixed finger, and with a series of eight triangular, proximally directed denticles on the cutting edge.

The second pereiopods (Fig. 5d) are chelate; the chela is unarmed on the cutting edges. The third pereiopods (Fig. 5e) are simple; the propodus shows a small subquadrate form.

The telson (Fig. 4c) is shorter than the sixth abdominal somite, slightly longer than broad, parallel sided on the proximal two-fifths, and tapering in the distal three-fifths with a rounded posterior extremity; the dorsal surface laterally bearing three pairs of setae, and medially a transverse row of setae. The uropods fail to reach the level of the distal margin of the telson. The endopod (Fig. 4d) is subsquare, and slightly longer than broad. The exopod is convex on the posterior margin, and with an obtuse tooth proximally.

The first pleopods are pediform, and two-segmented; the distal segment is flat, incurved and longer than the proximal one. The second pleopods are lost. The third to fifth pleopods are biramous, foliaceous, and with appendix interna.

Remarks — The species is most closely related to *G. minor* Gourret, 1887, from the Mediterranean (see Holthuis & Gottlieb, 1958:56) and the Gulf of Guinea, the Atlantic Ocean (see Le Loeuff & Intes, 1974:26) in the features of carapace, eye-stalks, antennules, antennae, first and third pereiopods, and tail-fan. The third maxillipeds and the second pereiopods, however, differ as follows; in the present species from East Africa the the ischium of third maxilliped bears a strong tooth at the rectangular inner posterior angle, and the fingers of the chela of second perciopods are unarmed on both cutting edges, while in *G. minor* the ischium of the third maxilliped is unarmed, and the fixed finger of second pereiopods has about six distinct teeth on the cutting edge, and the dactylus has several much smaller teeth.

G. coolibah Poore & Griffin, 1979, from north Western Australia, is clearly different from the species mentioned above, as in *G. coolibah* (see Poore & Griffin, 1979:278) the eye-stalks taper to a broad mesodistal lobe, the lateral projections of frontal carapace form broad lobes, and in the small cheliped the fingers are unarmed on both cutting edges, while in this species and *G. minor* the eye-stalks are of triangular shape, with a blunt top, the frontal carapace is without lateral lobes, and in the smaller cheliped the chela is provided with a series of denticles on both cutting edges.

CALLIANIDEIDAE Kossmann, 1880

Callianidea leura Poore & Griffin, 1979

Callianidea leura Poore & Griffin, 1979:281-284, text-figs. 40-41.

Material — 1 ♂, TL 26mm, NTM Cr. 000528, Heron Island, 13 December 1978, A. J. Bruce leg.

Remarks — The specimen examined was whitish in colour, collected under dead coral on sand reef flat at low tide, Heron Island (*fide* A. J. Bruce).

Distribution — Queensland, Australia.

UPOGEBIIDAE Borradaile, 1903

Upogebia (Acutigebia) trypeta K. Sakai, 1970 (Figs. 6-7)

Upogebia trypeta K. Sakai, 1970:49-56, text-figs. 1, 2a-b.

Upogebia (Acutigebia) trypeta — K. Sakai, 1982;72.

Material — 1 ♂, TL 13mm; 1 ♀, TL 29mm, NTM Cr. 000529, Heron Island, central reef flat, 14 December 1974, coll. A. J. Bruce; 1 ♀, TL 14mm, NTM Cr. 000530, Heron Island, 21 June 1979, coll. N. L. Bruce.

Description — The rostrum (Fig. 6a-c) is tapering, weakly declined distally, laterally armed with a row of denticles, and medially grooved from the tip to about the anterior third of the anterior thoracic region. The lateral frontal process of the carapace is

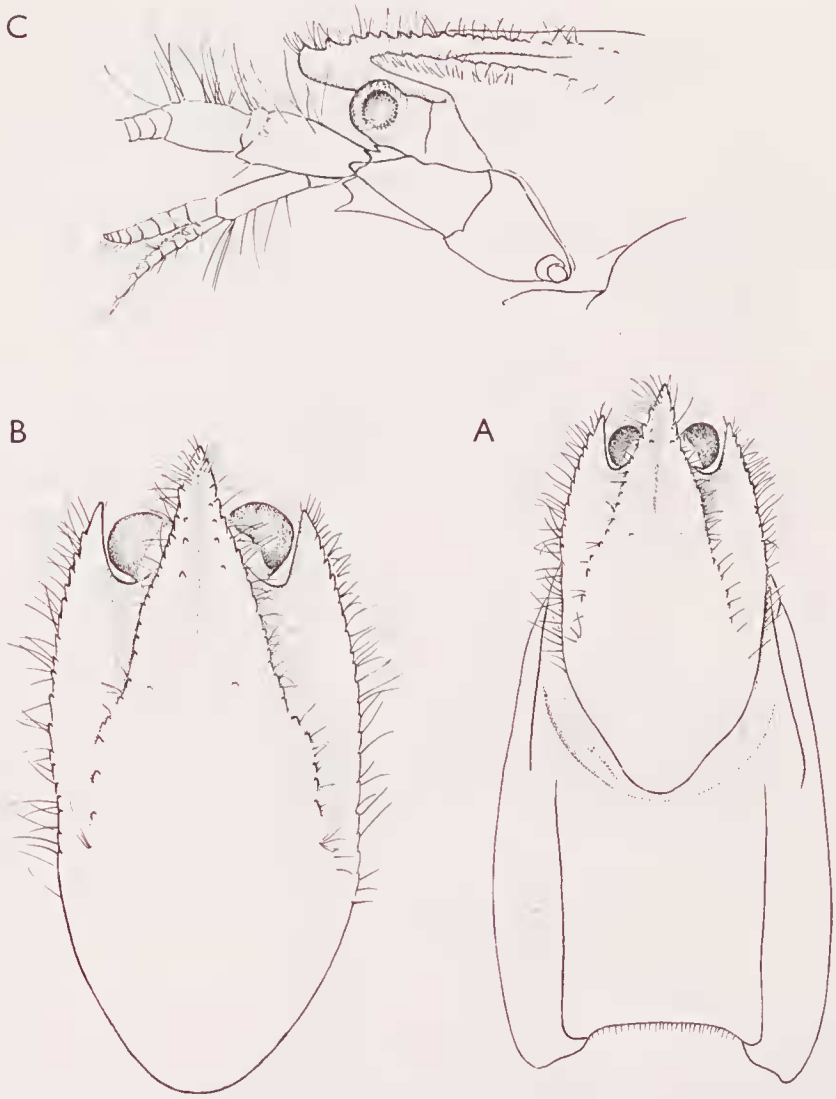

Fig. 6. *Upogebia (Acutigebia) trypeta* K. Sakai. A, carapace, dorsal view. B, anterior part of carapace, dorsal view. C, anterior part of carapace, lateral view. (A, female, measuring 29mm, NTM Cr. 000530; B-C, female, measuring 14mm, NTM Cr. 000529).

weakly declined, convergent distally, and with a large anterior hiatus between it and rostrum. The linea thalassinica extends to the posterior margin of carapace with a short interruption just posterior to the cervical groove.

The antennule (Fig. 6c) is short, slightly overreaching the level of the distal margin of the penultimate segment of antenna. The second segment is short, the third segment more than two times as long as second, and the flagella short, about as long as second and third segments combined. In the antenna the third segment bears a distal tooth ventrally, and the flagellum is long, about 9 times as long as those of the antennule.

The ischium of the third maxilliped has a crista dentata and a distinct proximal tooth on the inner surface. The merus is provided with four sharp separated teeth on the inner margin (Fig. 7a). The exopod consists of three segments.

The first pereiopods (Fig. 7b) are equal and subchelate. Ischium with a sharp tooth

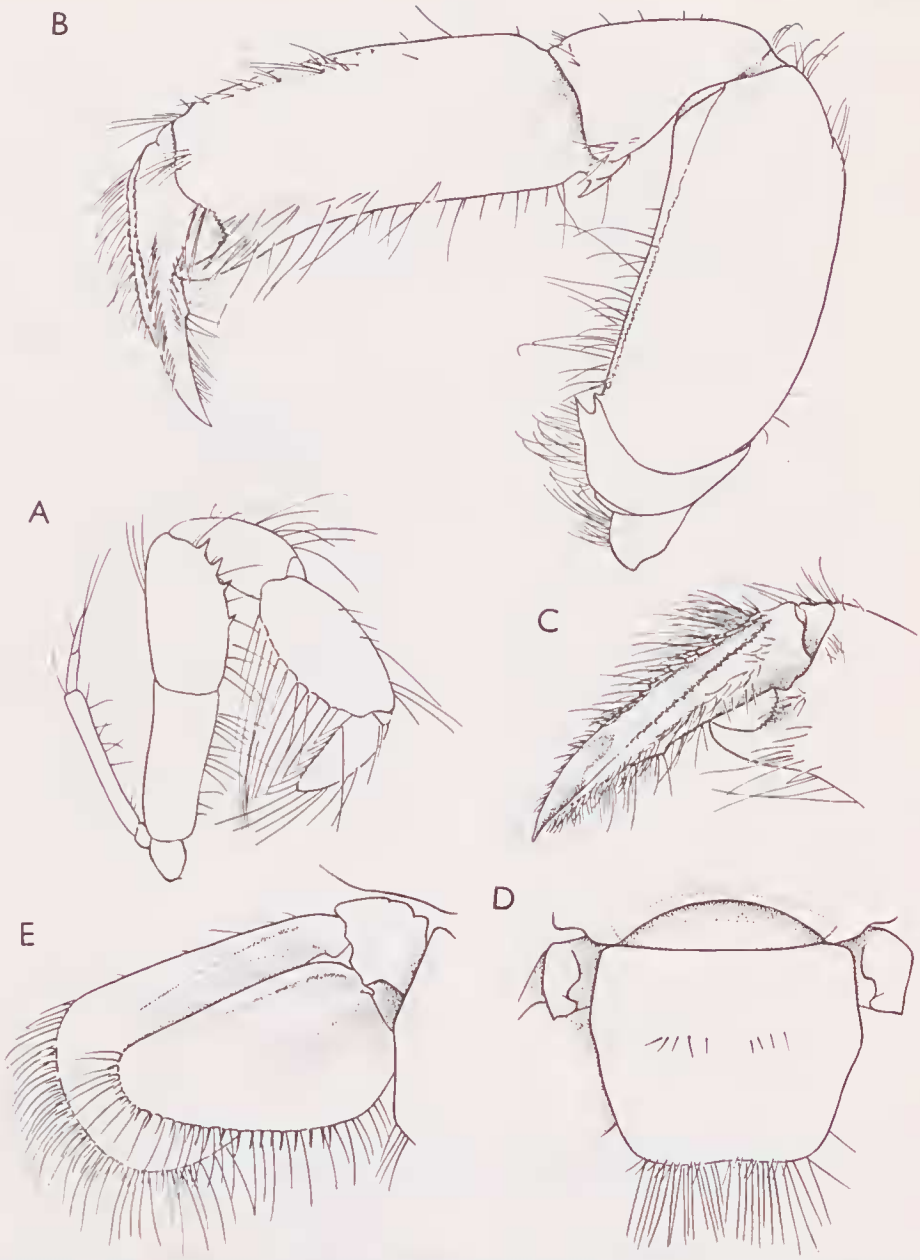

Fig. 7. *Upogebia (Acutigebia) trypeta* K. Sakai. A, third maxilliped, outer view. B, cheliped, outer view. C, distal part of cheliped, outer-dorsal view. D, telson, dorsal view. E, uropod, dorsal view. (A, D-E, female, measuring 14mm, NTM Cr. 000530; B-C, female, measuring 29mm, NTM Cr. 000529).

on the inner margin. The merus is provided with a subterminal tooth on the dorsal margin, and with a row of minute denticles on the outer ventral margin. The palm is unarmed on the ventral margin. The fixed finger shows a rounded hiatus at the proximal part of the cutting edge, which is armed with a series of 5-6 denticles. The upper exterior plate of dactylus (Fig. 7c) is transparent on the distal half, and provided with a series of denticles on both dorsal and ventral margins, though that on the ventral margin is inconspicuous in the small specimens.

The telson (Fig. 7d) is subsquare, broader than long, and the uropods (Fig. 7e) exceed the telson.

Remarks — The specimens examined are determined as *U. trypeta* on the following characters: the rostrum and a pair of the lateral frontal processes of the carapace are weakly declined distally, the palm of the first pereiopod is unarmed on the ventral margin, and the merus of the third maxilliped has four distinct separated teeth on the inner margin.

Colour in living animals is opaque white with deep brown inside the abdomen, and with orange ovary or ova, and cornea black (*fide* A. J. Bruce).

The present specimens represent the first records from Australia.

Distribution — Amami-Oshima (type-locality), Japan; Heron Island, Queensland.

ACKNOWLEDGEMENTS

Thanks are due to A. J. Bruce of the Northern Territory Museum, Darwin, for forwarding to me the interesting material together with his ecological notes, and for reading the manuscript; and also to Paul Clark of the British Museum (Nat. Hist.) in London for the loan of the holotype of *Callianassa martensi*.

ZUSAMMENFASSUNG

Die hier behandelten 5 Arten der Sektion Thalassinidea entstammen einer Ausbeute von der Insel Heron, Queensland, Australien, und einer von der Küste Tanzanias, *Gourretia manihinae* sp. nov., die Dr. A. J. Bruce vom Northern Territory Museum in Darwin erworben hat. Der Vergleich der Merkmale von *Callianassa haswelli* mit *C. martensi* macht es wahrscheinlich, dass es sich um die gleiche Art handelt. Für Australien wurde *Upogebia (Acutigebia) trypeta* erstmals festgestellt.

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